

WHAT IS CLAIMED IS:

1. A method of curing a formulation, comprising:
adding a thermal initiator and a photoinitiator to a curable composition to make a formulation;
treating the formulation with sufficient radiation having a wavelength between about 220 nm and about 600 nm to generate a first active curing agent from the photoinitiator; and
heating the formulation at a temperature sufficient to generate a second active curing agent from the thermal initiator, wherein the first active curing agent and the second active curing agent are both acids or both bases.
2. The method of claim 1, wherein the treating the formulation with sufficient radiation cures a first part of the formulation and the heating the formulation cures a second part of the formulation.
3. The method of claim 1, wherein the heating the formulation cures a part of the formulation that is shielded from the radiation.
4. The method of claim 1, wherein the second active curing agent is identical to the first active curing agent.
5. The method of claim 4, wherein the first active curing agent is hexafluoroantimonic acid.
6. The method of claim 1, wherein the thermal initiator is Nacure XC-7231 initiator.
7. The method of claim 1, wherein the photoinitiator is selected from the group consisting of onium salts, photodecomposable organosilanes, and iron arene compounds.

8. The method of claim 7, wherein the photoinitiator is an onium salt selected from the group consisting of sulphonium salts, diazonium salts, and halonium salts.

9. The method of claim 7, wherein the photoinitiator is a photodecomposable organosilane selected from the group consisting of O-nitrobenzyl triarylsilyl ethers, triarylsilyl peroxides, and acylsilanes.

10. The method of claim 1, wherein the thermal initiator is selected from the group consisting of anhydrides, mercaptans, amines, and nitrogen-containing heterocycles.

11. The method of claim 1, wherein the photoinitiator is selected from the group consisting of amines, N-([(4,5-methoxy-2-nitrobenzyl)oxy]—carbonyl-2,6-dimethylpiperidine, benzoin carbamates, O-acyloximes, and metal-bound photobase generators.

12. The method of claim 11, wherein the photoinitiator is an amine selected from the group consisting of ortho-nitrobenzyloxycarbonyl amines, photolabile amines, and photolabile tertiary amines.

13. The method of claim 1, wherein the curable composition is an epoxy-based composition.

14. The method of claim 13, wherein the epoxy-based composition is selected from the group consisting of cycloaliphatic epoxy resins, bisphenol A epoxy resins, epoxy acrylates, and epoxy novolacs.

15. The method of claim 1, wherein the formulation is treated with the radiation before the heating the formulation.

16. The method of claim 1, wherein the formulation is treated with the radiation during the heating the formulation.

17. A formulation comprising:

a curable composition;

a photoinitiator; and

a thermal initiator, wherein the formulation is curable with radiation having a wavelength between about 220 nm and about 600 nm and with heat to generate a first active curing agent from the thermal initiator and a second active curing agent from the photoinitiator, and wherein the first active curing agent and the second active curing agent are both acids or both bases.

18. The formulation of claim 17, wherein the second active curing agent is identical to the first active curing agent.

19. The formulation of claim 18, wherein the first active curing agent is hexafluoroantimonic acid.

20. A method of forming a connection between an electronic device and an underlying substrate, comprising:

placing a formulation between the electronic device and the underlying substrate, the formulation comprising a cationically curable composition, a photoinitiator, and a thermal initiator;

treating the formulation with sufficient radiation having a wavelength between about 220 nm and about 600 nm to generate a first active curing agent; and

heating the formulation at a temperature sufficient to generate a second active curing agent from the thermal initiator, wherein the first active curing agent and the second active curing agent are both acids or both bases.

21. The method of claim 20, wherein the treating the formulation with sufficient radiation cures a first part of the formulation and the heating the formulation cures a second part of the formulation.

22. The method of claim 20, wherein the heating the formulation cures a part of the formulation that is shielded from the radiation.
23. The method of claim 20, wherein the second active curing agent is identical to the first active curing agent.
24. The method of claim 23, wherein the first active curing agent is hexafluoroantimonic acid.
25. The method of claim 20, wherein the curable composition is an epoxy-based composition.
26. The method of claim 20, wherein the thermal initiator is Nacure XC-7231 initiator.
27. The method of claim 20, wherein the formulation is treated with the radiation prior to the heating the formulation.
28. The method of claim 20, wherein the formulation is treated with the radiation during the heating the formulation.
29. A structure comprising an electronic device, an underlying substrate, and a cured formulation between the device and the substrate, produced by a process comprising:
 - placing a formulation between the electronic device and the underlying substrate, the formulation comprising a curable composition, a photoinitiator, and a thermal initiator;
 - treating the formulation with sufficient radiation having a wavelength between about 220 nm and about 600 nm to generate a first active curing agent from the photoinitiator; and

heating the formulation at a temperature sufficient to generate a second active curing agent from the thermal initiator, wherein the first active curing agent and the second active curing agent are both acids or both bases.

30. The structure of claim 29, wherein the second active curing agent is identical to the first active curing agent.

31. The structure of claim 30, wherein the first active curing agent is hexafluoroantimonic acid.